THE AUSTRALIAN PLANT DISEASE RECORDER.

Volume 9 Number 1. January, 1957.

Edited by:

K.E. Hutton, Biological Branch,
Department of Agriculture,
Box 36, G.P.O., Sydney.

I N D E X.

PLANT DISEASE NOTES. Page.

Cereals and Grasses 1

Field and Fodder Crops 2

Vegetables 4

Fruit 8

---oOo---

For confidential circulation to plant pathologists in Australia. PLEASE DO NOT ABSTRACT.

COMMONWEALTH MYCOLOGICAL INSTITUTE
17 JUN 1957

CEREALS AND GRASSES.

POLYSORA RUST OF MAIZE:

As far as can be ascertained Puccinia polysora has its origin in Central America where for some time it was designated Puccinia sorghi.

This South American maize rust first appeared in Sierra Leone, Africa, in 1949 and by 1955 was reported to be present right throughout all Africa, south of the Sahara.

In 1954 S.P. Wiltshire predicted that Puccinia polysora was a real threat to India, Ceylon, Australia and South East Asia.

By 1956 it was recorded on Christmas Island, and in North Borneo, which suggests a movement across the Indian Ocean. It would appear highly probable that the spores of this particular rust may ultimately reach Australian shores.

In some African provinces it has been reported as causing a loss of 40% of the maize crop by reducing yield and bushel weight. Breeding and selection for resistance is being undertaken in certain regions. On the other hand maize rust has not proved serious in the relatively cool dry areas of Uganda.

- J. R. MORSCHEL.

Department of Health

Canberra.

FIELD AND FODDER CROPS.

KABATIELLA CAULIVORA ON SUBTERRANEAN CLOVER IN SOUTH AUSTRALIA:

Diseased specimens of subterranean clover from South Australian Department of Agriculture field plots at Parafield were submitted to the Waite Institute Department of Plant Pathology for diagnosis in September, 1956.

Histological examination of the material showed the presence of mycelium and conidia of K. caulivora in stems, leaves and petiolules, and incubation of diseased material in a moist chamber for a few days gave rise to numerous acervuli bearing abundant conidia in the lesions.

Pure cultures were established from single conidia and preliminary glasshouse inoculation tests from these have established their pathogenicity to variety Bacchus Marsh; this variety appears to be more severely affected than others in the plots concerned.

The conidia produced in lesions on the host following natural or artificial infection are quite distinct from those produced in culture on agar media or on autoclaved clover material - this phenomenon has been noted elsewhere in other studies of this organism.

This is believed to be the first record of K. caulivora in South Australia although it was undoubtedly present in these same plots in the year they were established, viz. 1955. Its occurrence elsewhere in South Australia has not been demonstrated.

- M. V. CARTER.

Waite Agricultural Research Institute,

Adelaide.

"LITTLE LEAF" VIRUS OF SUBTERRANEAN CLOVER IN TASMANIA:

The presence of a new virus disease of subterranean clover in south-eastern Australia has been reported by Grylls and Butler (J. Aust. Inst. Agr. Sci. 22: 73-74, 1956).

This disease was first observed in Tasmania on a property in the CampbellTown district in 1950, but the cause was not recognised at the time. It has now been shown to be due to a virus disease apparently identical with that described by Grylls and Butler. It has spread rapidly in the State and now occurs throughout the Launceston Basin, in the Fingal district and on several properties near Ouse.

The disease has had a very serious effect on productivity of affected pastures during the early spring. In some properties the great majority of plants have been infected. The plants have been very severelydwarfed so that bare soil has been exposed between them. In the worst cases productivity was reduced to at least one fifth of normal for a period of about three months, after which some improvement occurred through the growth of uninfected plants.

Transmission tests have been conducted. Mechanical transmission was unsuccessful. The virus was transmitted by Myzus persicae when an acquisition feeding period of 2 days or longer was used. When acquisition feeds of 2 minutes or 2 hours were employed transmission was not obtained. It therefore appears probable that the virus is of the persistent type.

It would be desirable that the same common name for this virus should be adopted throughout Australia. I have used the name "little leaf virus of subterranean clover" in this note but am ready to use any other name generally considered to be more suitable.

- G. C. WADE.

Department of Agriculture,

Hobart.

VEGETABLES.

THE SEROLOGICAL DIAGNOSIS OF POTATO VIRUS S IN SEVERAL POTATO VARIETIES:

Since the discovery of Potato Virus S in 1951, a number of commercial varieties and seed lines have been found to carry the virus. Overseas work indicates that this virus is probably world-wide in its distribution and many stocks have been found carrying 100% infection. Pathologists in European countries and the U.S.A. have examined material with the object of finding Virus S free plants and initiating the propagation of virus free seed lines.

The effect of Virus S on the Potato host is reported in the literature as being much the same as that of normally occurring strains of Potato Virus X. Mottle symptoms on the varieties so far investigated are said to be masked or fleeting in their appearance.

Through the courtesy of Dr. D. H. M. Van Slogteren of the laboratory for Flowerbulb Research, Lisse, Holland, a supply of Virus S anti serum was recently forwarded to the Plant Research Laboratory, Burnley. Chloroplast agglutination tests were made on fresh sap preparations from plants of several varieties using absorbed Virus S anti serum and absorbed normal rabbit serum. Positive agglutinations showed the virus to be present in varieties Katahdin, Kennebec, Sequoia, Snowflake and a Virus X free line of Green Mountain. All Saco variety plants tested to date are Virus S free and also a few Sequoia plants.

- R. D. ANDERSON.

Department of Agriculture,

Melbourne.

BACTERIAL CANKER OF TOMATOES:

Bacterial canker of tomatoes caused by Corynebacterium michiganense is prevalent in the Port Pirie area of South Australia. It is generally believed to be seed-borne but 20% infection developed in plants grown from seed which had been extracted by fermentation and subsequently hot-water treated. The seed was tested for the presence of C. michiganense but results were negative and it seems likely that in this particular case the organism was soil-borne.

- A. KERR

Waite Agricultural Research Institute

Adelaide.

BACTERIAL WILT OF TOMATOES AND POTATOES:

The occurrence of bacterial wilt (Pseudomonas solonacearum) in tomatoes and potatoes in the Sydney Metropolitan Area was much more common during the present season than for many years. The comparatively high incidence of the disease was unexpected as "new" land was not associated and temperatures generally were unusually low.

- W.S. SUTTON.

Department of Agriculture,

Sydney.

COLLETOTRICHUM ATRAMENTARIUM ON TOMATOES:

During the present season in a commercial glasshouse in the Hobart area Colletotrichum atramentarium has been found associated with a severe wilt and root rot of tomatoes. This has resulted in an almost total loss of crop.

The first symptoms appeared when plants were beginning to flower. The leaves wilted suddenly and the entire plant dropped. There was no necrosis of leaves associated with the wilting at this stage. On examining the roots of these wilted plants the cortical tissue was seen to be sloughing off and to have small black sclerotes embedded in the surface. Cultures yielded a fungus identified as Colletotrichum atramentarium. This organism has previously been found on potatoes from various parts of the State, but this is the firstrecord of its appearance on tomatoes.

Evidence suggests that the fungus was introduced to the glasshouse on a rotary hoe which had previously been used in ground which had grown potatoes. This is borne out by the fact that tomato plants in the rows adjacent to the walls and to steam pipes, i.e. places where the hoe could not be used, were unaffected by disease. The soil had been sterilized with chloropicrin prior to planting.

G. C. WADE

and

GWENDA CARTLEDGE.

Department of Agriculture,

Hobart.

FUSARIUM WILT OF PEAS:

Fusarium wilt of peas is an important economic disease in South Australia particularly in the irrigation settlement of Cooltong. In an attempt to control the disease twenty-four varieties of pea reputedly resistant to Fusarium wilt were imported from the U.S.A. and New Zealand and tested both in the laboratory and the field. Six of the varieties tested were immune to the local strain of the fungus which appears to be identical with Fusarium oxysporum f. pisi (Snyder) race 2 Snyder and Hansen, but these varieties are not regarded favourably by South Australian growers as they have a long straggly growth habit. Four Greenfeast wilt resistant varieties imported from New Zealand are not immune to the disease but have high field resistance and show promise for controlling Fusarium wilt.

- A. KERR

Waite Agricultural Research Institute,

Adelaide.

FRUIT.

RED CORE OR RED STELE OF STRAWBERRIES:

Diseased strawberry plants, variety Ettersburgh 89, submitted recently to the Waite Institute for diagnosis were infected with Phytophthora fragariae Hickman, the fungus causing red core or red stele. Infected roots showed the characteristic red colouration of the stele surrounded by healthy, white cortical tissue. Examination revealed the presence of large, thick-walled oospores in the vascular tissue, averaging about 40 u in diameter and surrounded by a dark red oogonial envelope, thus agreeing with P. fragariae. I can find no previous record of the disease for Australia.

Red core is one of the most destructive diseases of strawberries in Britain and the U.S.A. and because of its potential danger in South Australia a limited survey of strawberry growing properties in the Adelaide Hills was made by officers of the Department of Agriculture for South Australia and the Waite Institute. On the property from which the original diseased specimens were taken, the disease was widespread in beds ranging from one to five years of age and the causal fungus had obviously not been recently introduced. According to the grower, however, this was the first year that symptoms were obvious. Strawberries on one other property visited were seriously affected by the disease but here strawberry beds had been dying out for the last four years. Traces of the disease were found on three other properties in low-lying wet soil. The seasonal incidence of the disease will be checked in future years and at present the possibility of growing resistant varieties is being considered.

- A. KERR.

Waite Agricultural Research Institute,

Adelaide.